REMARKS

Claims 1-11 are pending in this application.

Rejection of Claims 1, 6 and 11 under 35 USC § 103(a)

Claims 1, 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sherer (US Patent No. 5,790,959) in view of O'Byrne (US Patent No 5,731,699).

The present claimed invention provides a radiofrequency receiver having a bandwidth split in at least two selected working subbands separated by at least one non selected band. The radiofrequency receiver includes a radiowave receiving means which converts an electromagnetic wave into a first signal. A first mixer then converts the first signal into a second signal by a fixed frequency transposition. A filtering means converts the second signal into a third signal by selecting part of the spectrum of the second signal. A second mixer converts the third signal into a fourth signal by frequency transposition by means of a transposition signal coming from a frequency synthesizer. The filtering means comprise at least two band-pass filters of the split bandwidths provided with switching means which make it possible to select only one of the filters. The frequency synthesizer delivers a transposition signal varying within a range depending on the width of the split bandwidths and on the width of the non selected bandwidth. Claims 1, 6 and 11 contain limitations similar to those discussed above.

The present claimed invention is concerned with providing a receiver having **a high bandwidth over 1.9GHz.** "The use of a conventional device such as that in Figure 1 [prior art] is not possible for many reasons. Among others, the frequency synthesizer 6 would have to operate over a 1.9 GHz range. Unfortunately, it is very difficult to produce such a synthesizer using current means." (Page 2, lines 25-30).

The problem addressed by the present invention is the inability of current transmitters to transmit a very broad bandwidth using current synthesizers. To solve

this problem the present claimed invention provides a simple solution: It is an object of the invention to provide a simple solution for a broadband transmitter whose received working bandwidth is split into at least two non-contiguous sub-bands (Page 2 line 37-Page 3, line 2).

The present claimed invention uses **two switched filters associated to a single synthesizer** to make it possible to operate over a very broad range. "**The use of two switched filters makes it possible to use a single synthesizer** to scan the at least two sub-bands of the working bandwidth" (Page 3, lines 17-19). "It has a bandwidth spread out over a spectral width w, (Fig. 4a) with, for example, w equal to 1.9 GHz and lying between 18.3 and 20.2 GHz. The working part of the bandwidth is split into two sub-bands B1 and B2 (Fig. 4a) which have, for example, the same width, namely 500 MHz, and are located between 18.3 and 18.8 GHz and between 19.7 and 20.2 GHz" (Page 4, line 38- Page 5, line 5, Claim 6, lines 12-17). "The frequency synthesizer operates for one sub-band in **superdyne mode** and for the other sub-band in **infradyne mode**" (Page 3, lines 20-22). "The bands B'1 and B'2 correspond, for example, to the 1.3 to 1.8 GHz and 2.7 to 3.2 GHz bands" (Page 5, lines 29-31).

The signal of frequency **Fvco varies within a frequency range** (for example 2-2.5GHz) of the same width (namely 500MHz) as the bandwidths of the 2 filters, in order that the resulting band B"1(for example 0.7-1.2GHz) or B"2 (for example 0.2-0.7GHz) is placed within the frequency spectrum and that a channel selected from the resulting band lies near an intermediate frequency FIo, for example equal to 700 MHz. (Page 6, lines 12-22, Claim 6, lines 15-17). A mixer 11 coupled to a local oscillator 12 transposes, as known from the state of the art, the selected channel into a base band.

Scherer (U.S. Patent No. 5,790,959) discloses a programmable band select and transfer module for local multipoint distribution service base stations. The band select is made up of transmit programmable band select transfer modules (tPST) and receive programmable band select transfer modules (rPST). "The rPST and tPST modules each select a spectral segment from an applied uwave signal by first shifting the frequency of the uwave signal so that the spectral segment programmed to be selected is disposed

about a predetermined IF frequency. Once shifted to the IF frequency, the spectral segment is selected by filtering the frequency shifted uwave signal using one of multiple fixed frequency filters" (Column 2, lines 23-30). "Each of the multiple fixed frequency filters has a different bandwidth, enabling spectral segments of various bandwidths to be selected by alternately switching between the multiple filters" (Column 2, lines 31-35). These filters are "multiple band selection filters" (Column 4, line 31). "Since the filtering takes place at this fixed predetermined IF frequency F, the filters 39a, 39b 39c can be optimized for selectivity" (Column 4, lines 37-39).

Scherer is concerned with providing the selection and translation of spectral segments within sectors of a base station. The module comprises switches to select the filters which permits selection of 40, 80, 120 MHz wide spectral segment corresponding to 3 different bands The filtering takes place at a fixed predetermined IF frequency (1.2 GHz).

The Office Action asserts that Scherer describes a receiver with a second mixer which converts the third signal into a fourth signal by frequency transposition by means of **transposition signal coming from a frequency synthesiser,** wherein the filtering means comprising at least two band-pass filters with **split bandwidth.**

However, the bandwidth disclosed in Scherer col. 4 lines 35-37 are not split but are different. The bandwidths are 40, 80 or 120MHz and the filtering means permits the choice of bandwidths. Scherer is concerned with the optimization of the frequency response of the filters selecting spectral segments and not with the problem of operating over 1.9 GHz using a single conventional frequency synthesizer as is the present claimed invention. The present claimed invention solves the problem of operating, using a single synthesizer, over 1.9 GHz by splitting the bands into 2 non-contiguous bands by using a single synthesizer which delivers a tuning signal varying in a range to enable the scanning of the two sub-bands of the working bandwidth. Therefore, as Scherer is not concerned with using a single synthesizer to operate at over 1.9 GHz, Scherer neither discloses nor suggests "that the frequency synthesizer delivers a transposition signal varying within a range depending on the width of the split

bandwidths and on the width of the non selected bandwidth" as recited in Claims 1, 6 and 11 of the present invention.

O'Byrne describes a method for measuring the radio signal transmission statistics of a communication channel. O'Byrne teaches "the signal transmitted by antenna 10 is received by antenna 12 and is fed to splitter 14" (Col. 3, lines 66-67). One of the split signals is fed to a wide bandwidth receiver and the second split signal is fed to a narrow bandwidth receiver.

The Office Action asserts that O'Byrne teaches of a bandwidth split in at least two selected working subbands separated by at least one non selected band. However, O'Byrne does not disclose the presence of a mixer and of a frequency synthesizer. Therefore, O'Byrne, similar to Scherer, is not concerned with using a single synthesiser to operate at over 1.9 GHz as is the present claimed invention. Thus, O'Byrne, similar to Scherer, neither discloses nor suggests that "the frequency synthesiser delivers a transposition signal varying within a range depending of the width of the split bandwidths and on the width of the non selected bandwidth" as recited in claim 1, 6 and 11 of the present invention.

Additionally, the Office Action asserts that it would have been obvious to incorporate the features of O'Byrne into the system of Scherer and that this combination would teach a frequency synthesiser delivering a transposition signal varying within a range depending of the width of split bandwidths and on the width of non selected bandwidth. Scherer is concerned with providing the selection and translation of spectral segments within sectors of a base station. O'Byrne is concerned with measuring the wide bandwidth and the narrow bandwidth radio signal transmission statistical characteristics of a communication channel to a location for evaluating the particular location for reception. However, as noted above, Scherer and O'Byrne are not concerned with using a single synthesiser to operate at over 1.9 GHz as is the present claimed invention. Therefore, the combination of the systems of Scherer and O'Byrne, similarly to the individual systems, is not concerned with using a single synthesiser to operate at over 1.9 GHz as is the present claimed invention. Thus,

the combination of the systems of Scherer and O'Byrne, similarly to the individual systems, neither discloses nor suggests that "the frequency synthesiser delivers a transposition signal varying within a range depending of the width of the split bandwidths and on the width of the non selected bandwidth" as recited in claim 1, 6 and 11 of the present invention.

In view of the above remarks to the claims 1, 6 and 11, it is respectfully submitted that there is no 35 USC 103(a) compliant enabling disclosure in Scherer and O'Byrne, when taken alone or in combination, showing the above discussed features as claimed in Claims 1, 6 and 11. It is thus further respectfully submitted that this rejection is satisfied and should be withdrawn.

Rejection of Claims 2-5 and 7-10 under 35 USC § 103(a)

Claims 2-5 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sherer (US Patent No. 5,790,959) in view O'Byrne (US Patent No 5,731,699) and further in view of the prior admitted art.

The Applicant Admitted Prior Art (AAPA) describes a conventional satellite receiver. The frequency assignments that may be used include non-contiguous frequency bands within a typical 1.9 GHz range. However, "the use of a conventional device such as that...[to receive a bandwidth over 1.9 GHz in range] is not possible for many reasons. Among others, the frequency synthesizer 6 would have to operate over a 1.9 GHz range. Unfortunately, it is very difficult to produce such a synthesizer using current means" (Page 2, lines 25-30).

The Office Action asserts that the AAPA discloses two filters having pass bands of the same width. However, the AAPA discloses the typical receiver using a typical 1.9 GHz bandwidth range. In order for the AAPA to operate over a 1.9 GHz bandwidth "several LNB blocks [must be used to]...bring the various bands down to a single intermediate frequency range or...several TUNER units [must be used] which operate at various frequency ranges" (Page 2, lines 31-34). This is unlike the present claimed

invention which discloses the use of two filter having pass-bands of the same width. The use of two switched filters "makes it possible to use a single synthesizer to scan the at least two sub-bands of the working bandwidth" (Page 3, lines 17-19). Therefore, the AAPA, neither discloses nor suggests "at least two band-pass filters of the split bandwidths provided with switching means which make it possible to select only one of the filters" as recited in claims 1 and 6 of the present invention. Furthermore, the AAPA is not concerned with operating over 1.9 GHZ using a single conventional frequency synthesizer as in the present claimed invention. Therefore, the AAPA, similarly to Scherer and O'Byrne, neither discloses nor suggests "that the frequency synthesizer delivers a transposition signal varying within a range depending on the width of the split bandwidths and on the width of the non selected bandwidth" as claimed in claims 1 and 6 of the present invention.

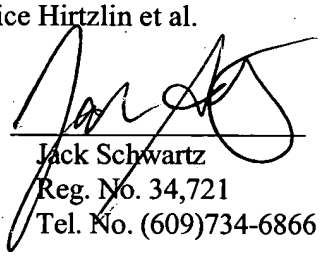
Scherer, O'Byrne and the AAPA, as discussed above, are not concerned with operating over 1.9 GHZ by switching between the uses of two pass-band filters having the same width. The Office Action asserts that the combination of the systems of Scherer, O'Byrne and the AAPA would disclose the principles of the present claimed invention. However, even if one were to combine the systems of Scherer, O'Byrne and the AAPA, the combined system would not be concerned with operating over a bandwidth higher than 1.9 GHz. The combined system, similar to the individual systems of Scherer, O'Byrne and the AAPA, neither discloses nor suggest "at least two band-pass filters of the split bandwidths provided with switching means which make it possible to select only one of the filters" as recited in claims 1 and 6 of the present invention. Additionally, the combined system, similar to the individual systems of Scherer, O'Byrne and the AAPA, neither discloses nor suggest "that the frequency synthesizer delivers a transposition signal varying within a range depending on the width of the split bandwidths and on the width of the non selected bandwidth" as claimed in claims 1 and 6 of the present invention.

As claims 2-5 and 7-10 are dependant on independent claims 1 and 6 respectively, it is respectfully submitted that these claims are allowable for the same reasons as discussed above in regards to independent claims 1 and 6.

Having fully addressed the Examiner's rejections, it is believed that, in view of the preceding amendments and remarks, this application stands in condition for allowance. Accordingly then, reconsideration and allowance are respectfully solicited. If, however, the Examiner is of the opinion that such action cannot be taken, the Examiner is invited to contact the applicant's attorney at the phone number below, so that a mutually convenient date and time for a telephonic interview may be scheduled.

No additional fee is believed due. However, if an additional fee is due, please charge the additional fee to Deposit Account 07-0832.

Respectfully submitted,
Patrice Hirtzlin et al.

By: 

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